AMENDMENT TO THE CLAIMS

This Listing of Claims will replace all prior versions, listing, of claims in the application.

LISTING OF CLAIMS:

Claim 1 (original) A method for determining biological heat potential of biological reaction systems, particularly the ATAT system, which comprising the following steps:

using an acclimation apparatus to incubate an aerobic culture and transferring the culture into a reactor for the biological reaction test;

controlling, heating, and recording an ambient air surrounding the reactor at a first preset temperature;

controlling and supplying a pure oxygen to maintain the oxygen level at a preset value in a headspace of reactor, and recording an on-line and real-time oxygen uptake data (O_u vs. t);

controlling and heating a content of the reactor at a second preset temperature, and recording an on-line and real-time heat compensation data (H_c vs. t);

using the oxygen uptake data and the heat compensation data to compute a specific biological heat potential (h_b)and a heat loss flux (J_o); and

using the calculated specific biological heat potential (h_b) and the heat loss flux (J_o) to compute a transient heat compensation ratio (r) and a minimal heat compensation ratio (r_{min}) during a reaction period.

Claim 2 (original) A method for determining biological heat potential as recited in Claim 1, wherein the on-line and real-time oxygen update data is obtained with an oxygen controller, which comprising means for controlling and providing the oxygen depleted in the reactor.

Claim 3 (original) A method for determining biological heat potential as recited in Claim 1, wherein the on-line and real-time heat compensation data is obtained with a heat compensation controller, which comprising means for controlling and heating the content of the reactor at the second preset temperature.

Claim 4 (currently amended) A method for determining biological heat potential as recited in Claim 1, wherein the on-line and real-time oxygen uptake data (O_u vs. t) and the heat compensation data (H_c vs. t) are analyzed by a heat balance equation, considering a reaction term, a heat loss term, and a heat compensation term:

$$0 = \underset{reaction}{h_b \frac{dO_u}{dt}} - \underset{loss}{J_0} + \underset{compensation}{\frac{dH_c}{dt}} \qquad (1)$$

where h_b being the specific biological heat potential in the unit of kcal/g BODr, O_u being the accumulated oxygen uptake data in the unit of g, J_o being the heat loss flux in the unit of kcal/min, and H_c being the accumulated compensation heat in the unit of kcal; and

integrating equation (1) with the initial conditions of $t = 0$, $O_u = 0$, and $H_c = 0$ to obtain

$$H_c = J_o t - h_b O_u \qquad (2)$$

Claim 5 (currently amended) A method for determining biological heat potential as recited in Claim 4, wherein the specific biological heat potential (h_b) and the heat loss flux (J_o) are used to calculate a heat compensation ratio (r):

$$r = H_c / J_o t \qquad (3).$$

Claims 6-15 (canceled).